

1. A carrier head for a chemical mechanical polishing apparatus, comprising:

a substrate mounting surface; and

a retaining ring to maintain a substrate beneath the

5 mounting surface during polishing, the retaining ring including a lower portion having a bottom surface for contacting a polishing pad during polishing and an upper portion secured to the lower portion, wherein the lower portion is made of a plastic having a durometer measurement  
10 between about 80 and 95 on the Shore D scale and the upper lower portion is made of a metal which is more rigid than the plastic.

2. The carrier head of claim 1, wherein the plastic

15 is substantially inert to a chemical mechanical polishing process.

3. The carrier head of claim 1, wherein the lower portion is thicker than a substrate to be polished.

20  
4. The carrier head of claim 3, wherein the lower portion is between about 100 and 400 mils thick.

5. The carrier head of claim 1, wherein the upper and  
25 lower portions are substantially annular in shape.

6. The carrier head of claim 1, wherein the plastic  
is selected from the group consisting of polyphenylene

ex. of  
plastics  
inert

2

sulfide, polyethylene terephthalate, polyetheretherketone, and polybutylene terephthalate.

7. The carrier head of claim 6, wherein the plastic  
5 is polyphenylene sulfide.

8. The carrier head of claim 1, wherein the metal is selected from the group consisting of steel, aluminum, and molybdenum.

10

*MFC properties*.<sup>9</sup> The carrier head of claim 1, wherein the metal material has an elastic modulus about ten to one-hundred times the elastic modulus of the plastic material.

15

10. The carrier head of claim 1, wherein the lower portion is adhesively attached to the upper portion.

11. The carrier head of claim 10, wherein the adhesive is a slow curing epoxy.

20

12. The carrier head of claim 1, wherein the lower portion is press fit to the upper portion.

*Line 5*

25

13. A retaining ring for a carrier head having a mounting surface for a substrate, comprising:

*Sub 1*  
a generally annular lower portion having a bottom surface for contacting a polishing pad during polishing, the lower portion made of a plastic having a durometer measurement between about 80 and 95 on the Shore D scale; and

a generally annular upper portion secured to the lower portion, wherein the upper lower portion is made of a metal which is more rigid than the plastic.

As  
Ad  
He